

CLAIMS

What is claimed is:

1. An implant device especially adapted for treatment of neuroglial or neuro-muscular tissue, said implant device comprising (1) an elongated body with a distal end and a proximal end; (2) a plurality of micro-electrodes at the distal end; (3) an electric connection terminal at the proximal end for connection to a power source; (4) a plurality of electrical conductors extending through the elongated body from the distal end to the proximal end, wherein each electrical conductor is attached to a single micro-electrode at the distal end, whereby any selected pair of the plurality of micro-electrodes can be electrically connected to the electric connection terminal to form an electrical pathway between the electric connection terminal, the selected pair of the plurality of micro-electrodes, and the neuroglial or neuro-muscular tissue to be treated; and (5) a multiplexer or switching device such that the selected pair of the plurality of micro-electrodes can be used to form the electrical pathway.

2. The implant device as in Claim 1, wherein the plurality of micro-electrodes is greater than about 3 micro-electrodes.

3. The implant device as in Claim 2, wherein the plurality of micro-electrodes is about 4 to about 20 micro-electrodes.

4. The implant device as in Claim 1, wherein the multiplexer or switching device comprises a computer chip.

5. The implant device as in Claim 4, wherein the power source is a pacemaker.

6. The implant device as in Claim 5, wherein the multiplexer or switching device is incorporated into the power source.

7. The implant device as in Claim 4, wherein the plurality of micro-electrodes allows the electrical pathway to be directional.

8. An implant device for electrostimulation or electrical monitoring of tissue to be treated within a body cavity, said implant device comprising (1) an elongated body having a distal end and a proximal end; (2) a penetration mechanism at the distal end to penetrate the tissue to be treated; (3) a quick release connecting mechanism adjacent to the penetration mechanism, wherein the quick release connecting mechanism is effective to separate the penetration device from the elongated body once the implant device is properly positioned in the body cavity; (4) a first immobilizing mechanism and a second immobilizing mechanism adjacent and proximal to the quick release connecting mechanism to secure the implant device to the tissue to be treated wherein the first and second immobilizing mechanisms are spaced apart along the elongated body a distance sufficient to span the tissue such that the first immobilizing mechanism is located between the quick release connecting mechanism and the second immobilizing mechanism; (5) a plurality of micro-electrodes located between the first and second immobilizing mechanisms; (6) an electrical connection terminal at the proximal end for connection to a power source; (7) a plurality of electrical conductors extending through the elongated body from the plurality of micro-electrodes to the proximal end, wherein each electrical conductor is attached to a single micro-electrode, whereby any selected pair of the plurality of micro-electrodes can be electrically connected to the electric connection terminal to form an electrical pathway between the electric connection terminal, the selected pair of the plurality of micro-electrodes, and the tissue to be treated; and (8) a multiplexer or switching device such that the selected

pair of the plurality of micro-electrodes can be used to form the electrical pathway.

9. The implant device as in Claim 8, wherein the plurality of micro-electrodes is greater than about 3 micro-electrodes.

10. The implant device as in Claim 9, wherein the plurality of micro-electrodes is about 4 to about 20 micro-electrodes.

11. The implant device as in Claim 9, wherein the multiplexer or switching device comprises a computer chip.

12. The implant device as in Claim 9, wherein the power source is a pacemaker.

13. The implant device as in Claim 12, wherein the multiplexer or switching device is incorporated into the power source.

14. The implant device as in Claim 9, wherein the first and second immobilizing mechanisms are tines, clamps, or a flexible attachment member which can be folded back on the elongated body and attached to the elongated body thereby forming a closed loop around the tissue to be treated.

15. The implant device as in Claim 9, wherein the plurality of micro-electrodes allows the electrical pathway to be directional.

16. A method for clinically effective electrostimulation of neuroglial or neuro-muscular tissue, said method comprising

(a) positioning an implant device having a distal end and a proximal end such that the distal end can provide electrical stimulation of the neuroglial or neuro-muscular tissue, wherein the distal end of the implant device has a plurality of micro-electrodes and the proximal end of the implant device has an electrical connection terminal for connection to an electrical pulse generator, and wherein various pairs of the micro-electrodes can be electrically connected to the electrical connection terminal,

(b) positioning the distal end of the implant device sufficiently close to the neuroglial or neuro-muscular tissue to be electrostimulated,

(c) attaching the electrical pulse generator to the electrical connection terminal of the implant device,

(d) delivering electrical impulses to the implant device whereby various pairs of the plurality of micro-electrodes can be tested for electrostimulation of the neuroglial or neuro-muscular tissue, and

(e) selecting a pulsing micro-electrode and a receiving micro-electrode from the various pairs of the plurality of micro-electrodes tested in step (d) to provide clinical effective electrostimulation of the neuroglial or neuro-muscular tissue.

17. The method as in Claim 16, wherein the plurality of micro-electrodes is greater than about 3 micro-electrodes.

18. The method as in Claim 17, wherein the plurality of micro-electrodes is about 4 to about 20 micro-electrodes.

19. The method as in Claim 16, wherein the multiplexer or switching device comprises a computer chip.

20. The method as in Claim 19, wherein the power source is a pacemaker.

21. The method as in Claim 20, wherein the multiplexer or switching device is incorporated into the power source.

22. The method as in Claim 16, wherein the plurality of micro-electrodes allows the electrical pathway to be directional.

23. The method as in Claim 16, wherein the clinical effectiveness of the electrostimulation is a clinically significant reduction in the frequency or severity of neurological tremors in the neuroglial or neuro-muscular tissue.

24. A method for clinically effective electrostimulation of gastrointestinal tissue, said method comprising

(a) inserting an implant device through a trocar into the endo-abdominal cavity, wherein the implant device has a plurality of micro-electrodes and an electrical connection terminal for connection to an electrical pulse generator, wherein various pairs of the micro-electrodes can be electrically connected to the electrical connection terminal,

(b) positioning the plurality of micro-electrodes within an area of gastrointestinal track to provide electrical stimulation to the gastrointestinal tissue to be electrostimulated,

(c) immobilizing the implant device so as to maintain good electrical stimulation of the gastrointestinal tissue to be electrostimulated during a treatment regime,

(d) attaching the electrical pulse generator to the electrical connection terminal of the implant device,

(e) delivering electrical impulses to the implant device whereby various pairs of the plurality of micro-electrodes can be tested for electrical stimulation of the gastrointestinal tissue to be electrostimulated,

(f) selecting a pulsing micro-electrode and a receiving micro-electrode from the various pairs of the plurality of micro-electrodes tested in step (e) to

provide clinically effective electrical stimulation of the of the gastrointestinal tissue to be electrostimulated, and

(g) using the selected pulsing micro-electrode and received micro-electrode to electrostimulate the gastrointestinal tissue.

25. The method as in Claim 24, wherein the plurality of micro-electrodes is greater than about 3 micro-electrodes.

26. The method as in Claim 25, wherein the plurality of micro-electrodes is about 4 to about 20 micro-electrodes.

27. The method as in Claim 25, wherein the multiplexer or switching device comprises a computer chip.

28. The method as in Claim 27, wherein the power source is a pacemaker.

29. The method as in Claim 28, wherein the multiplexer or switching device is incorporated into the power source.

30. The method as in Claim 24, wherein the first and second immobilizing mechanisms are tines, clamps, or a flexible attachment member which can be folded back on the elongated body and attached to the elongated body thereby forming a closed loop around the tissue to be treated.

31. The method as in Claim 24, wherein the plurality of micro-electrodes allows the electrical pathway to be directional.

32. The method as in Claim 24, wherein the gastrointestinal tissue subjected to electrostimulation is associated with the Auerbach plexus or the Meissner plexus.

33. The method as in Claim 24, wherein the clinically effective electrical stimulation is designed to effect weight reduction.

34. The method as in Claim 32, wherein the clinically effective electrical stimulation is designed to effect weight reduction.

35. A method for clinically effective electrostimulation of gastrointestinal tissue, said method comprising

- (a) implanting an implant device in the endo-adominal cavity, wherein the implant device has a plurality of micro-electrodes and an electrical connection terminal for connection to an electrical pulse generator, wherein various pairs of the micro-electrodes can be electrically connected to the electrical connection terminal,
- (b) positioning the plurality of micro-electrodes within an area of gastrointestinal track to provide electrical stimulation to the gastrointestinal tissue to be electrostimulated,
- (c) immobilizing the implant device so as to maintain good electrical stimulation of the gastrointestinal tissue to be electrostimulated during a treatment regime,
- (d) attaching the electrical pulse generator to the electrical connection terminal of the implant device,
- (e) delivering electrical impulses to the implant device whereby various pairs of the plurality of micro-electrodes can be tested,
- (f) measuring the impedance between the various pairs of the plurality of micro-electrodes,

(g) selecting a pulsing micro-electrode and a receiving micro-electrode from the various pairs of the plurality of micro-electrodes tested in step (e), wherein the selected pulsing micro-electrode and the selected receiving micro-electrode pair has the lowest, or close to the lowest, impedance measured in step (f), and

(h) providing electrostimulation of the gastrointestinal tissue using the selected pulsing micro-electrode and the selected receiving micro-electrode pair.

36. The method as in Claim 35, wherein the impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured and the pulsing micro-electrode and the selected receiving micro-electrode pair is reflected based on the remeasured impedance between the various pairs of the plurality of micro-electrodes.

37. The method as in Claim 35, wherein the clinically effective electrical stimulation is designed to effect weight reduction.

38. The method as in Claim 36, wherein the clinically effective electrical stimulation is designed to effect weight reduction.

39. The method as in Claim 36, wherein impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured at least once a day.

40. The method as in Claim 36, wherein impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured at least every 12 hours.

41. A method for clinically effective electrostimulation of neuroglial or neuro-muscular tissue, said method comprising

(a) positioning an implant device having a distal end and a proximal end such that the distal end can provide electrical stimulation of the neuroglial or neuro-muscular tissue, wherein the distal end of the implant device has a plurality of micro-electrodes and the proximal end of the implant device has an electrical connection terminal for connection to an electrical pulse generator, and wherein various pairs of the micro-electrodes can be electrically connected to the electrical connection terminal,

(b) positioning the distal end of the implant device sufficiently close to the neuroglial or neuro-muscular tissue to be electrostimulated,

(c) attaching the electrical pulse generator to the electrical connection terminal of the implant device,

(d) delivering electrical impulses to the implant device whereby various pairs of the plurality of micro-electrodes can be tested for electrostimulation of the neuroglial or neuro-muscular tissue, and

(e) measuring the impedance between the various pairs of the plurality of micro-electrodes;

(f) selecting a pulsing micro-electrode and a receiving micro-electrode from the various pairs of the plurality of micro-electrodes tested in step (d), wherein the selected pulsing micro-electrode and the selected receiving micro-electrode pair has the lowest, or close to the lowest, impedance measured in step (e); and

(g) providing electrostimulation of the neuroglial or neuro-muscular tissue using the selected pulsing micro-electrode and the selected receiving micro-electrode pair.

42. The method as in Claim 41, wherein the impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured and the pulsing micro-electrode and the selected receiving micro-electrode

pair is reflected based on the remeasured impedance between the various pairs of the plurality of micro-electrodes.

43. The method as in Claim 42, wherein impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured at least once a day.

44. The method as in Claim 42, wherein impedance between the various pairs of the plurality of micro-electrodes is periodically remeasured at least every 12 hours.